

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – III • EXAMINATION – WINTER 2012****Subject code: 731603****Date: 26/12/2012****Subject Name: Polymer Structure & Property Prediction****Time: 10.30 am – 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1 (a) Discuss the effect of Structure regularity, molecular stiffness and intermolecular attraction on Polymer properties. **(07)**

(b) Establish the General Relationships between Chemical Composition and Polymer Properties. **(07)**

Q.2 (a) Describe in detail about Halogens element in Polymer. **(07)**

(b) Explain the conversion of 100% Total Solids from Low to High Molecular Weight by giving examples of Thermosetting Resins & Monomer Casting. **(07)**

OR

(b) What do you mean by Mechanical Failure? How it may be observed in Polymeric materials? Discuss in detail. **(07)**

Q.3 (a) List the different structural factors which restrict the rotation of polymer molecule. Explain these factors in detail. **(07)**

(b) Write in detail about effect of Polymer molecular flexibility on Thermal Properties. **(07)**

OR

Q.3 (a) “The fundamental flexibility of a generalized polymer molecule is most simply analyzed by basic concepts of mathematics and physics”. Justify the statement. **(07)**

(b) Discuss the effect of Molecular flexibility on Resistance & Dielectric Properties of Polymeric materials. **(07)**

Q.4 (a) Explain in detail about the Nature of Crystallinity in Polymers. **(07)**

(b) “Kinetic Factors Affecting Rate and Extent of Crystallization”. Justify the statement. **(07)**

OR

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- Q.4 (a)** Discuss the Relations between Orientation and Crystallization. **(07)**
- (b)** How Orientation of Polymer molecules affect the Thermal & Electrical properties of Polymer? Describe in detail. **(07)**
- Q.5 (a)** Short note on 'London Dispersion Forces'. **(07)**
- (b)** How the Polarity affect the Adhesion of a Polymer? Write the Classification of Adhesives by Polarity. **(07)**

OR

- Q.5 (a)** How the Hydrogen Bonding form between Polymer Molecules? Explain in detail. **(07)**
- (b)** Discuss about Ionic Bonding & Cross-Linking. **(07)**
